



# Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report For Menemsha School

## What is SWAP?

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to:

- ? Inventory land uses within the recharge areas of all public water supply sources;
- ? Assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? Publicize the results to provide support for improved protection.

## SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the  
Massachusetts Department of  
Environmental Protection,  
Bureau of Resource Protection,  
Drinking Water Program

Date Prepared:  
October 2003

**Table 1: Public Water System (PWS) Information**

<b>PWS NAME</b>	Menemsha School
<b>PWS Address</b>	State Road
<b>City/Town</b>	Chilmark
<b>PWS ID Number</b>	4062003
<b>Local Contact</b>	Sylvia Brown – Yeomans
<b>Phone Number</b>	

<b>Well Name</b>	<b>Source ID#</b>	<b>Zone I (in feet)</b>	<b>IWPA (in feet)</b>	<b>Source Susceptibility</b>
Well #1	01G	250	750	Modeerate

## Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

### Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

### This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

## 1. Description of the Water System

The well for the Menemsha School is located adjacent to the school. The well has a Zone I of 250 feet and an Interim Wellhead Protection Area (IWPA) of 750 feet. The IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the Zone I and IWPA.

The well serving the facility has no treatment at this time. The DEP requires public water suppliers to monitor the quality of the water. For current information on monitoring

### What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

### What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

results and treatment, please contact the Public Water System contact person listed above in Table 1. Drinking water monitoring reporting data is also available on the web via EPA's Envirofacts website at [http://www.epa.gov/enviro/html/sdwis/sdwis\\_query.html](http://www.epa.gov/enviro/html/sdwis/sdwis_query.html).

## 2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

### Key issues include:

1. **Non-water supply activities in Zone I;**
2. **Livestock operation;**
3. **Residential development; and,**
4. **Road.**

The overall ranking of susceptibility to contamination for the well is moderate, based on the presence of multiple moderate rankings of non-water supply uses within the Zone I and IWPA and the lack of ownership or control of the entire Zone I.

1. **Zone Is** – Currently, the well does not meet DEP's Zone I regulations, which allow only water supply related activities in the Zone I and require that the land within the Zone I be owned or controlled by the public water system. The schools's Zone I contains buildings, a road and two small dirt parking lots. The public water supplier does not own or control all the land encompassed by the Zone I. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

### Recommendations:

- ✓ Purchase Zone I property or obtain control of the Zone I through a conservation restriction.
  - ✓ Move vehicle parking out of Zone I, if this is not feasible, pave parking areas and direct stormwater out of Zone I.
  - ✓ If Zone I threats cannot be mitigated consider well relocation.
  - ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.
2. **Livestock operation** – There is a small livestock (cows) operation within the IWPA. Runoff from livestock operations has the potential to contaminate ground and surface waters.

**Table 2: Table of Activities within the Water Supply Protection Areas**

Potential Contaminant Sources	Zone I	IWPA	Threat	Potential Concern
Road	Yes	Yes	Moderate	Stormwater runoff, spills
Parking lot	Yes	Yes	Moderate	Stormwater runoff, spills
Residential-lawn care	No	Yes	Moderate	Fertilizer and pesticide use
Residential-above ground storage tanks	No	Yes	Moderate	Leaks, spills
Residential-septic systems	No	Yes	Moderate	Bacteria, improper disposal of hazardous materials
Livestock operation	No	Yes	Moderate	Manure (microbial contaminants and nutrients): improper handling
Aquatic wildlife (small pond)	Yes	Yes	Low	Microbial contaminants

\* For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - [www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/).

## Glossary

**Zone I:** The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

**IWPA:** A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I. To determine IWPA radius, refer to the attached map.

**Zone II:** The primary recharge area defined by a hydrogeologic study.

**Aquifer:** An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

**Hydrogeologic Barrier:** An underground layer of impermeable material that resists penetration by water.

**Recharge Area:** The surface area that contributes water to a well.

### Recommendation:

- ✓ Incorporate best management practices such as vegetated buffers to reduce the risk of impaired water quality from non-water supply activities.
- ✓ Work with cow owners in developing best management practices related to manure management.

**3. Residential Development** – There is low-density residential development within the IWPA. Activities associated with residential development, which are potential sources of contamination, include lawn and garden care, septic systems and fuel storage.

### Recommendation:

- ✓ Use best management practices when applying fertilizers or pesticides within the IWPA.
- ✓ Septic system components should be located, inspected and maintained on a regular basis.
- ✓ Any aboveground storage tanks in your IWPA should be located on an impermeable surface, and also contained in an area large enough to hold 110% of the complete liquid volume, should a spill occur.

**4. Road** – Part of State Road is within the Zone I and IWPA. Runoff and spills from roads can contaminate public wells.

### Recommendation:

- ✓ Map stormwater drainage and direct runoff out of Zone I.
- ✓ Maintain contact with the Fire Department about spills.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

## 3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. The Menemsha School should work with landowners within the IWPA to reduce the potential for contamination of its drinking water source. School officials should review and adopt the key recommendations above and the following:

### Priority Recommendations:

#### Zone I:

- ✓ Keep additional non-water supply activities out of the Zone I.
- ✓ Remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Post water supply protections signs in the Zone I and IWPA.
- ✓ Conduct regular inspections of the Zone I. Look for illegal dumping or evidence of vandalism.
- ✓ Use Best Management Practices (BMPs) and restrict activities that could pose a threat to the water supply.
- ✓ If it's not feasible to purchase privately owned land within the Zone I at this time, consider a conservation restriction that would prohibit potentially threatening activities or a right of first refusal to purchase the property.

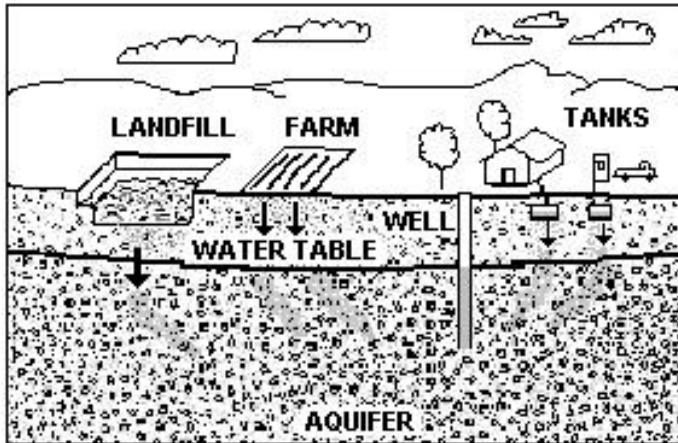


Figure 1: Example of how a well could become contaminated by different land uses and activities.

### For More Information:

Contact Isabel Collins in DEP's Lakeville Office at (508) 946-2726 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

[www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/)

### Additional Documents:

To help with source protection efforts, more information is available by request or online at [www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/), including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier and town boards.

- ✓ Keep road and parking lot drainage away from the well.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.

### Training and Education:

- ✓ Train staff on proper hazardous material use, disposal, emergency response, and best management practices. Post labels as appropriate on raw materials and hazardous waste.
- ✓ Post drinking water protection area signs at key visibility locations.
- ✓ Incorporate groundwater education into school curriculum (K-6 and 7-12 curricula available; contact DEP for copies).
- ✓ Work with your community to ensure that stormwater runoff at the road is directed away from the well and is treated according to DEP guidance.

### Planning:

- ✓ Work with local officials in town to include the facility's IWPA in the Aquifer Protection District Bylaw and to assist you in improving protection.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

### Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under that program. For additional information, please refer to DEP's web site. Other funding opportunities are described in *Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation* at <http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

## 5. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact Sheet
- Your Septic System Brochure
- Industrial Floor Drains Brochure
- Healthy Schools Fact Sheet
- Source Protection Sign Order Form